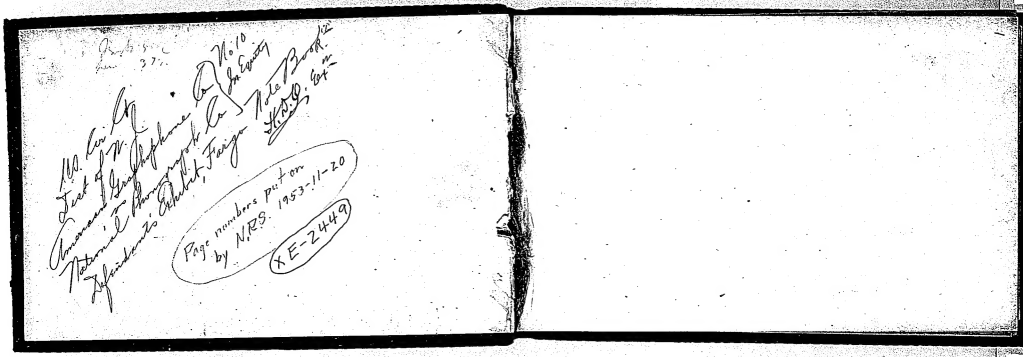
Notebook, PN-91-09-29, 1894-1896

This notebook was used by Clarence B. Fargo at the American Graphophone Company's plant in Bridgeport, Connecticut, during the period 1894-1896 for notes on chemical analyses of wax phonograph cylinders. The National Phonograph Co. used the book (as well as PN-95-09-18, Pocket Notebooks) as an exhibit in patent litigation initiated by the Graphophone Co. The book subsequently was retained at Edison's laboratory. On pages 109 through 91 (in reverse order) are several formulas for mixing hard wax cylinders. There are also some of Fargo's own accounts from the period 1891-1894 and various recipes for drug prescriptions. The spine is stamped "Receipts." The book contains 159 numbered pages and has been used in both directions.

Filming order: 1-49, 157-90.

Blank pages not filmed: 6-7, 10-13, 22-43, 50-89, 110-121, 124-149, 158-159.


Page numbers put on by NARS. 1953-11-20
XE-2449

~~Analyses~~

Analysis of Edison Cyl

Stearic Acid	79.580
Ozokerite	11.790
Resin	0.660
Sodium Oxide Na_2O	4.752
Iron Fe_2O_3	0.620
Manganese Oxide Mn_2O_3	0.048
Sulphuric Acid SO_3	1.641
Aluminum Oxide Al_2O_3	1.998

Sept 26 - 95

10 Hole

260 lb Schneider Stock @ 11 cts

57 lb 37 o/o Lye (1 lb Sam. 74% alc) 6 2 Mole

4 lb Boyer Edit Co Hyd of Aluminum 5 1/2

4 1/2 lb American Wax & Paper Co Paraffine @ 7 1/4

Regular Mixt

30 6 66 54 50 } 6 { 51 11 1 7/8 8 1/3

260 57 4 42 } 15 { 52 11 3/5 4/5 8 2/5 } x 6 { 312 Stock 68 2/5 37 o/o 4 4/5 Edit 5 2/5 Par

50 Cyl weigh 150

1 P " 3

1 E " 1

Paper Inst + Shells

Net Trial E Cyl 6 Min

Oct 11th 95

1 Drum of Caustic Soda
76%
650 lbs Nett @ .02723 = 17.70

Str Acid 11 ct Schneider & Sons
10 ct Later.

Pail Lime 7/4 cts America Mfg
& Paper Co

Oct 17th 95

75 Unfinished Cyl with 75 Bore
flows weigh 30½ lbs

75 Finished Cyl weigh 13½ lbs

The Quantity of Shavings to be
added to New Stock should be
1,259 2 times the quantity of
New Stock or to Regulate
Batch of 3562 New Add 448.
lbs of Old Total 804 lbs

804 lbs = 4466 Finished Cyl
or
804 lbs = 1.977 Moulded Cyl

Analysis of Edison Cylinder

Stearic Acid		79.580
Ozokerite		11.790
Resin		0.000
Sodium Oxide	Na_2O	4.752
Iron	Fe_2O_3	0.020
Manganese	$Sa\ Mn\ O_3$	0.008
Lead	$Sa\ PbO$	0.048
Sulphuric Acid	So_3	1.641
Aluminum Oxide	Al_2O_3	1.998
		99.837

Caustic Soda 76% @ .02 3/4 cts by the drum of about 700 lbs each
bought of Edw Hills Son
25 Cedar St
New York

Stearic Acid Saponified
bought of Schneider & Son
at 10 1/2 cts per lb two to Chicago
three ton lots at a time Good Ill
Later bought of Smith & Nicol Co
at 8 3/4 cts with 1% off 143 Front St
if paid within 10 days N Y.

Aluminum Oxide bought of
Pennsylvania Salt Co
at 5 1/4 cts per lb Phila Pa
Pittsburg Pa

Paraffine at 7 1/2 cts of The
American Wax and Paper Co also
C M White Agglomerated @ 13 cts
W " " @ 12 cts
S S " " @ 14 "
Yellow " " @ 11 cts

Greenbanks 98% Caustic Soda
Formerly of Troy Laundry &
Machine Co N.Y. 10 lbs in Can

Mixture made by Stormes
which he says is the Edison
Mixture is as follows

100 lbs Swift's Nicolo Stearic Acid
melted in Iron Pot
15 lbs Caity Water put into Steam Pot
and add 22 lbs Sal Soda and
when dissolved add 1 lb
Greenbanks 98% Caustic Soda (Powdered)
then when boiling add a quantity
about 6 inches in diameter (Weighed 10 lbs) of a
Powder of Aluminum Bronze Powder bought
of the Pittsburg Reduction Co of New York
Room 16 & 11 Havemeyer Bldg
Powder added slowly from 26 Courtland St N.Y.
After Liquor is done foaming Filter

and add to Stearic Acid with
out heating no any more than
it is after filtering
Stormes says he uses to run a
steam pipe into the kettle and
mix the Liquor that way after
Liquor has done foaming it
will stand any heat almost
without foaming again
when it is added to Stearine
should dip a tin a half pint
or less in dipper and dip
just enough to let little Steam
flow out into hand dipper
when it will foam violently
and liquor should go in very
slowly after all foaming is
done add 20 lbs of white
ozokerite (or Siriene or Paraffine)
melted and then cook about
Time filter through Canvas or
drilling and moulded
Smells Bad Good Light

Mr Mac Connell pays
the pres. city of Manhattan
Bridge Dept. Cash no 126 la
30 & 6 Block

6 Lbs Stearic Acid
4 Lbs 37° Lye (Caustic Soda)
1 Lb Pure Alumina (Sheet Alu)
17 Lbs 32° Sal Soda Lye
12 Lbs White Glycerine

Walcutt & Leeds
53 East 11th St
NY City

Empire State Phone Co
Buffalo NY.

Moved over to Earl's [illegible] Table Flour and Feed Trade Health

Up found 7th 26 Richard Turner [illegible] 69 ct. and Cake [illegible] Feldspar 500 for Feed - Feldspar part No 116.75 Crank 120.92 Ed 130.

T. A. Macdonald to C. B. Fargo Dr

July 16	To	1½ h	work @	20 cts	30
" 17	"	1½ h	"	20	30
" 18	"	1½ h	"	20	30
" 19	"	1½ h	"	20	30
" 20	"	½ h	"	20	10
" 25	"	1½ h	"	20	30
" 26	"	2 h	"	20	40
" 27	"	1 h	"	20	20
					220
aug 1st	"	1½ h	"	20	" 30
					2,50

Signs of Windows for screens

22 1/8 m Dr upstairs Dr LR Room #2 BP
30 1/2 m 2
30 3/4 2
22, 2
22 1/4 3
16 m 11 up stairs 1 BP down stairs
31 1/2 m high upstairs
33 m " down stairs

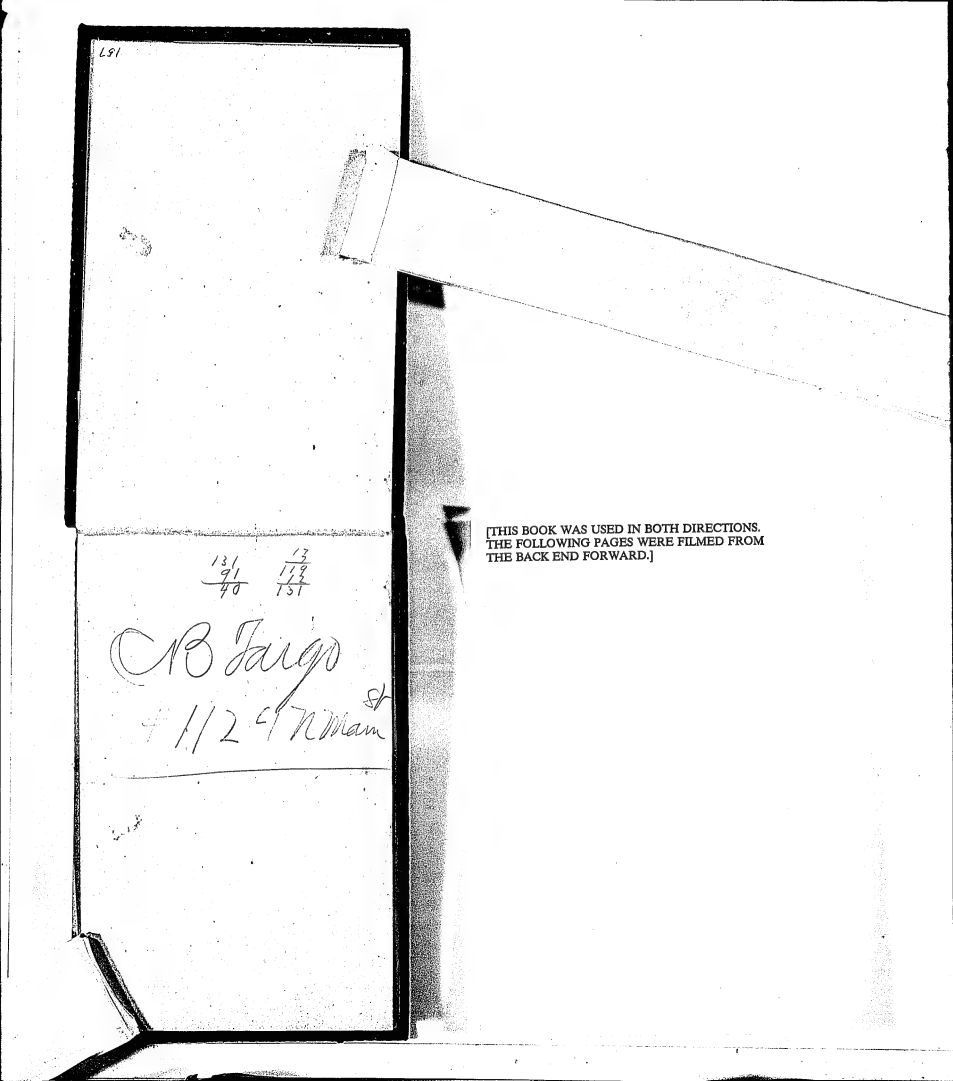
June 5 - 1 1/2 h time

12 – 2ft × 1½ in × 7/8"
12 – 2ft 9in × 1½ in × 7/8
8 – 2ft 7in × 1½ in × 7/8
8 – 2ft 6in × 1½ in × 7/8
10 – 2ft 3in × 1½ in × 7/8
10 – 2ft 9in × 1½ in × 7/8
6 – 1ft 6in × 1½ in × 7/8
6 – 2ft 9in × 1½ in × 7/8

36 – 2ft 9in
12 – 2ft

Bell & Stuff for the Wardrobe
Wardrobe Pieces
White Pine Clear Stock
36 Pieces 2ft 9in × 1½ in × 7/8"
12 " 2ft × 1½ in × 7/8
8 " 2ft 7in × 1½ in × 7/8
10 " 2ft 3in × 1½ in × 7/8
6 " 1ft 6in × 1½ in × 7/8
Free from Shakes

Mr Westlake



[THIS BOOK WAS USED IN BOTH DIRECTIONS. THE FOLLOWING PAGES WERE FILMED FROM THE BACK END FORWARD.]

Dr E S Manning Cr

1894		
Jan 8	To 2 y 11 h work @ .30	11.70
Jan 22	" 4 h " " .30	1.20
Feb 14	" 3 h " " .30	.90
	To Cabinet for Bath Room	[illegible]
[illegible]	To [illegible]	[illegible]
" 14	" 7 h " " .30	2.10
" 15	" 6 h " " .30	1.80
" 16	" 4 h " " .30	1.20
		25.70
1894		
Jan 8	To 2 h work @ .30	.60
Apr 19	" 1 h " " .30	.30
" 27	" 3 h " " .30	.90
May 2nd	" 4 h " " .30	1.20
" 8	" 2 h " " .30	.60
" 19	" 7 h " " .30	2.10
" 29	" 1½ h " " .30	.45
June 5	" 3 h " " .30	.90
" 6	" 2½ h " " .30	.75
" 8	" 2½ h " " .30	.75
" 11	" 3 h " " .30	.90
" 12	" 4 h " " .30	1.20
" 13	" 2 h " " .30	.60
		31.30

E01

94					
June					36.95
19	To	4 h	work @ 30 cts per hour		1.20
20	"	3 h	" @ 30 cts " "		90
25	"	3 h	" @ 30 " "		90
26		2 h	" @ 30 " "		60
July 8		2 h	" @ 30 " "		60
" 10		3 h	" " 30 " "		90
					42.05
Aug 8	To	1½ h	work @ 30 " "		45
" 9	"	1½ h	" @ 30 " "		45

For Nervousness

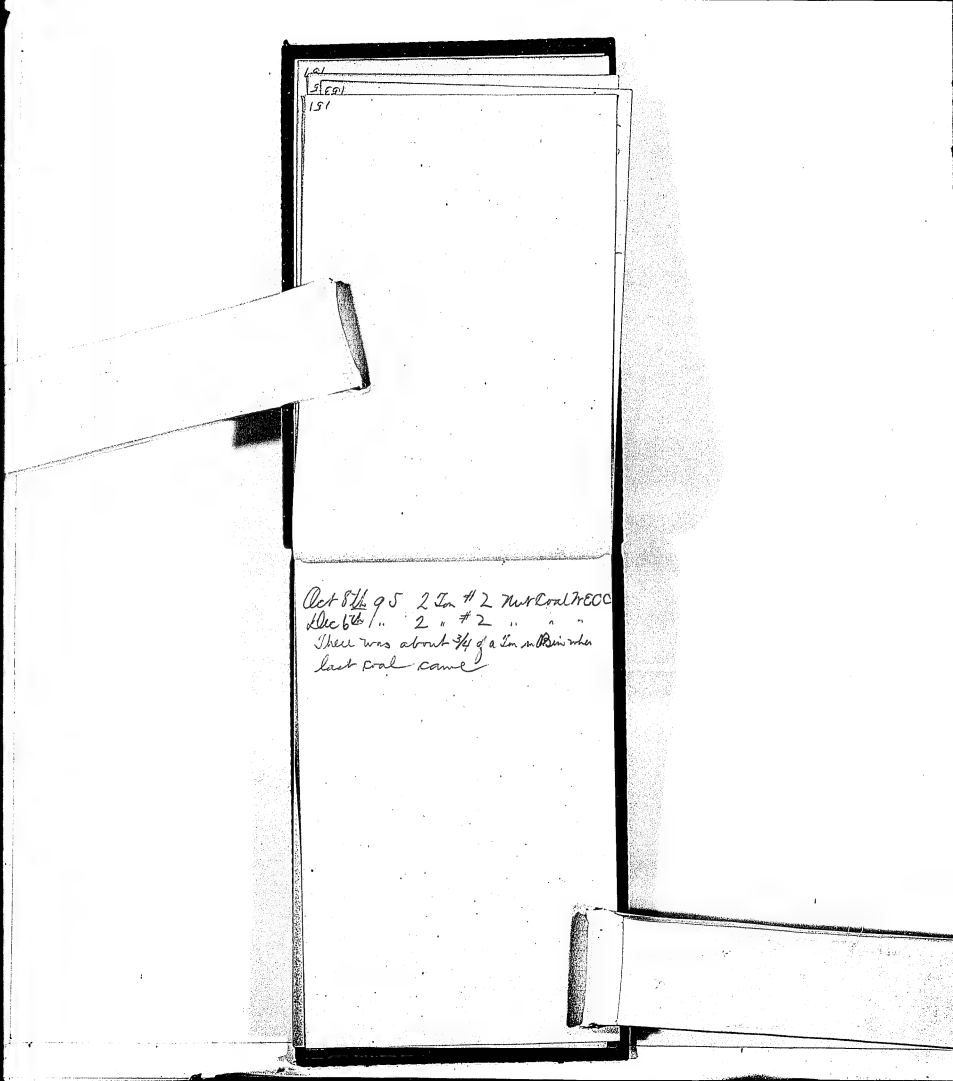
Asa-foetida
5 grains coated Pills

1 Pill every 3 hours
From New York World Physician
or Physicians Department

For La Grippe

Muriate of Ammonia	2 drams
Tinct of Hentane	2 drams
Brown Mixt	1 ounce
Syrup of Wild Cherry Bark	3 ounces

Give one teaspoonful every 3 hours


151
Oct 8th 95 2 Ton #2 Nut Coal 7 FOC
Dec 6th " 2 " #2 " " "
There was about 3/4 of a Ton in Bin when
last coal came

Number of Prescriptions and ~~Rx~~ last used

3 mos 28 days 1993 # 92086 fd Seventy Cough Cold Chest pain for Cough accompanying ~~Rx~~ Sleep" (Wood)

8-13-94 ~~Rx~~ 37891 Seventy fd Regulation Antidiabetic (Female) Sig: 1 teaspoonful 3 times a day in water

Warner Pharmacy
#23638 Aug 31st 92
Gargle & drink for Inflamed Throat. Might have to be for internal use. Not sure
One Teaspoonful 3 times a day

Bulls Head Pharmacy fd Seventy #2158 Teaspoonful 4 times a day in Water Before Meals & Before retiring For Pain in lower part of Stomach caused by Cold in bladder & Intestines wound at 1945

Formula for mixing
Hard Wax Oil

24 lbs Best Stearine
Brand used was ("AA") from
A C Belden & Co NY
Melt Stearine in porcelain
lined Kettle Raise to temperature
of about 350 deg F then add
3 lbs Caustic Soda
Add Soda slowly stirring
vigorously after Soda has thoroughly
dissolved (or united with Stearine
which will take some little time
we have Stearic Soap
To this add 12 lbs Best Black
Agothaude Agothaude Boiled at
a temperature of about 375 deg F
for 18 or 20 hours This is necessary
To drive off Volatile Oils which
it contained Add BO in a melted
state stirring well till thoroughly

united then add 3
3 lbs Acetate (Sugar) of Lead
This will cause some foaming
for a short time but will
soon settle and become
quite free from bubbles
Keep at temp of about 375 deg
for 5 hours and then filter
About 20 thickness of Cheesecloth

Melting Points

	Centigrade	Farenheit
Prepared Suet	39.5	103
Spermaceti	38.	100
White Wax	65.5	150
Yellow Wax	60	140

5

[91] I must

St + BO + Scav + Al
86 22 11 21

~~Scav used was some that had~~
~~been exposed to the air and~~
was soft like lard and I presume had lost some of its strength
Found Lady after getting home next that 1/10 or 1/2 lbs the weight of the St used was enough to saponify it so old Scav could not have been strong as new

Melt St + Bo seperately and cook 2 hours then mix stirring well in and cook 2½ at a temp of about 330 deg F Mas called away and Mixt was cold for 3 days Then melt + heat to 330 deg about and add Scav slowly (Taking 1 hour to add) Scav was soke that had been exposed to air and had collected Moisture

so was in a liquid state when used having stood 3 days. After adding Scav cooked at about 350 deg for 5 hours then added Al slowly (1 hour) Cold over night Melted next morn and cook at 350 deg for 4 hours Mixt accidentally got very hot and came very near burning I should imagine

E Cyl weigh before finishing 13 3 and Brg Eon Pot holds 395 lbs about or 350 lbs about 2 in from top

591

II Must May 23rd /[illegible]

Str + Bo + Scan + Al
384 96 48 48

Melt #1 + #2 separately and cook 2 h add together and cook 2 hours at about 300 deg or a little more add Scan slowly (1 hour) found that Scan did not dissolve quickly Then the lumps seemed to gather the Bo or Str Bo in the shape of a coating around the lumps and did not dissolve readily Cook 5 hours at from 330 to 350 deg Add Al (1/2) Then keep at about 350 deg for 4 h

Must E

Must D + Al
64 5

Temp of 350 deg for 3 hours
A good Cyl This was made
May 23rd and on Sept 29th

there is not a trace of Blue mould and Cyl is as bright as a new dollar

Must G

Must D + Bo Good
64 5

Must H Blue

Must D + Str
64 5

Must #10 Sept 19th

Str + Al + Bo + Scan (Sept 22 nd 16 times from)
48 8 8 5

48 lb 8 lb 8 lb 5 lb

Must at high temp
Melt and cook 1 lb 15 min add Al 5 min cook 5 min add Bo 5 min Cook 5 min add Scan 5 Cook 1/2 h Cold next morn melt 1 Cook 3 h from last cooking made a great deal finer and better grain and Must is fine much like Phoros Must not blue so a slight trace of Blue (not much) after a week standing

#1/5 mixt same as #10 only
Bo used was some that had
been cooked 9½h at a gentle
heat and filtered also increased
all the ingredients ~~10 to~~ 5th 1 th yield

Ste	+ Al	+ Ro	+ Scam	This Mixt
64	10⅔	11⅔	6⅔	

shows up better than any
no blud after about 1 week and
fracture shows a dull color
and not that glassy ~~shiny~~
surface at the same time
it is very fine close grain
and looks just like the
Edison Mixt

Alumenuium Acetate
used in place of Acetate
of Lead for MacDonald Mixt
Bought of Merck & Co
Mfg Chemist
1873 Williams
NY

The Stearine is a fine pure
white and fracture shows
little pearlites of ~~something~~
something that shines like
little specks of Mica.
Mr MacDonald says
there is Paraffine added
to the Stearine and that
it is a special preparation
but think it is only a fine
grade of Stearine used for
making Candles.
The Caustic Soda is powdered
and comes in Bloch Bros Cans
50 Cents Red white label with Blue
& Red lettering think it is an
impurited soda but not sure

101/ Reg Pat Mixt

280 lbs Special Stearine and something like 2 cans of Caustic Soda used to saponify and then about should add 2 lbs Acetate of Aluminum (or 1 one ecbop of the Torsion Balances about for 7 m acres.

Can of Caustic Soda = 10 lbs

Merck & Co Mfg Chemists

145 lbs St (Special) bought from (Candle Makers)
Mr Mac Elmalee says that there is 5 lbs of Paraffine added to it

52½ lbs Special Stearine + 112½ lbs Bs (Pure)

Evansville Mixt Alum Ste.
is made after the Formula
51 a Stearic Acid (Octadecanoic Acid)
9 a Paraffine
10 5/8 a 3 1/2 ~~3 3 1 1 1~~ Lbs
7/8 of Aluminum Oxide Precipitated
E Merck Germany Glarmitated

~~I think the 3 3 5 of 3 5 5 page is~~
~~made by taking 2 parts of water~~
~~distributed or Condensed from Steam~~
~~and adding 1 part of Caustic~~
~~Soda (Soapchips) Trap Laundry~~
~~Mach Co~~
Stearic Acid is simply the
Stearine with all foreign
matter expressed leaving
the pure Stearic Acid
which is very hard dry
white substance

bb) Must for Hand Work

2 1/2 lbs Adamantine Stock Blanc
of Canada (cream tablets)
(Stearic + 5% Paraffine Adams & Co NY)
26 lb Pure Paraffine

3 3/8 lb Hydrate of Aluminum

42 1/2 lb 3 1/2 % Lye made from boiled Greenleaf Caustic Soda
Troy Laundry Machine Co Agents
New York

Another Must

7 lbs Adamantine Stock Melted
add 8 oz Green Caustic Soda
2 1/2 oz Acetate of Aluminum

To Reduce Centigrade Scale to Farenheit divide the number of degrees (C) by 5 and multiply the result by 9 then add 32 and the answer will be degrees of Farenheit See following Example

9/5 | 159 centigrade
3 4/5
27 9/1
1 7 3/5
28 6/5
5 1 8 1/5 degrees Farenheit

Can Greenleaf Caustic Soda weighs

Gross 9 lbs 13 1/2 oz
Can 1 14 1/2 oz
8 15 3/8 oz

You will find the Stearic Acid (said to be pure) bought of Schneider & Co. Chicago gave the best results. Must Bars made from this were dry and hard in fact were about as near perfect as possible to make it. Also the pure Stearic Acid of Belden & Co New York was successful in Mixture

3½ o/o Lye

Take 10 Gal of Snow Water (Melted Snow) ~~Heat up~~ to Blood warm 98°

3½ o/o Lye Take 10 Gal of Distilled Water (Water that has condensed from Steam or Snow Melted) and heat up till you can hardly hold your hand in it with out burning hand Place this water in an Earthenware Jar or something of like kind and stir in 3½ Lbs Soda Caustic Add the Hydrometer (An instrument for determining the density of heavy liquids like the old fashioned kind of floating an Egg in it and if it was heavy (or dense) enough it would float and if not would sink)

Would register 3½ o/o. 1st Bill Can of Lean was added and then part of another then third My Hydrometer and I think the balance of the can was added and part of another at any rate I slow with the Hydrometer register 3½ o/o If it is to strong more water can be added if not enough Add it as OK I think it wants to stand a few hrs before you can get the full strength (48 hrs minimum at least) after standing a while a scum something comes over the top The Lye should be faltered through Filter Paper before using This is as near the way I make 3½ Lye as I can tell now from Having Helped Mr Macdonald make it and what I have seen in the making

Take Work About 15 lbs Soda to 10 gal Distilled water as what is needed to get 3½ o/o

A Formula for hand Mixture
60 parts Adamantine Stock
6 " Paraffine
3½ " Hydrate of Aluminum dissolved in
1/2 " 37½ ℔s Lye

The Aluminum is dissolved by heating the Lye and after it gets mostly warm add the Aluminum and keep stirring while temp. is raised to 238 or 40 deg F and the Liquid gets clear then add to rest of Mixt (Stir & Presto)

The previous Mixtures have not been so soft or sticky and shaving would not crumble under the finger by rolling when cut cubicly cheese cut

The following Must are very good and Mr Childs

The musical operations Columbia Monograph Co says they are as good as the Imperial

#114 Mixt
100 gr Schroeders Stearic Acid
2 gr Ozena Salt Co Hydrate Aluminum
21 gr 37½ ℔s Lye (N2O7)
Lye is accounted Excess
over Nigger Wax (Black Tar Ex. 68)

#115 Mixt same as above with exception of 6 gr Nig Wax added.

#116
51 gr Melted Schroeders Stearic Acid
.5 gr Nig Wax (Tar)
1 gr Hydrate Aluminum
11 gr 37½ ℔s Lye

#117
150 gr Schroeders Stearic Acid Nig Wax
32 gr Geo L Wood & Co Soda Lye
3 gr Penna Salt Co Hydrate Aluminum
9 gr Wallace (Nig Wax I think)

EB

on 4/17 the Mg was added the last thing & caused less foaming than when added first as the Stillene did make it. The Mush must show these Mixtures after water as all ont Temp should not exceed 320 to 330 deg Farenheit.

Large Batch of 4/17 Mush

2 ½ lbs Rice Starch (Belden) Mush) Melted and at about 200 deg F. then added

26 lbs 3/4/5 Lye to which had been added

4 lbs of Penna Salt Co Hypo of Aluminum and whole stirred till 2 ½ deg F till solution clears itself and then add to Mush

Mush will foam quite a little but if proper is made as hot as possible and water cooked out fast

well not raise up very high on pot after Water is all out Mush will go down & sts level and before foaming gets through care should be taken that Temp is kept down as when the water leaves Mush Temp will go up very rapidly as soon as foaming is done add 12 lbs of Mg Wax and in this case Mg Wax was melted and filtered through Lawn and Cheese Cloth and then added to Mush stir in well and Cook until all Ebulation ceases and Mush is free from foam almost and has a leathery look. I think this is correct for me for one of the best Mush there is to work and need of every thing but the quantity of Aluminum & Mg Wax and am pretty sure of them.

16

July 20th 96

Samp lot of 206 lbs Stearic Acid
sent on by Smith & Nicolls
1 N.Y. City as even better than
Schneider & Sons stock and at
a cost of a little over 8cts per lb
(8 lbs 8¾ cts)

July 20th
Schneider has been underselling
at 8 0/8 cts put up in bags
marked pure saponified
Stearic Acid.
Have been buying 4 bbls at
a time although have got less
quantity for same price